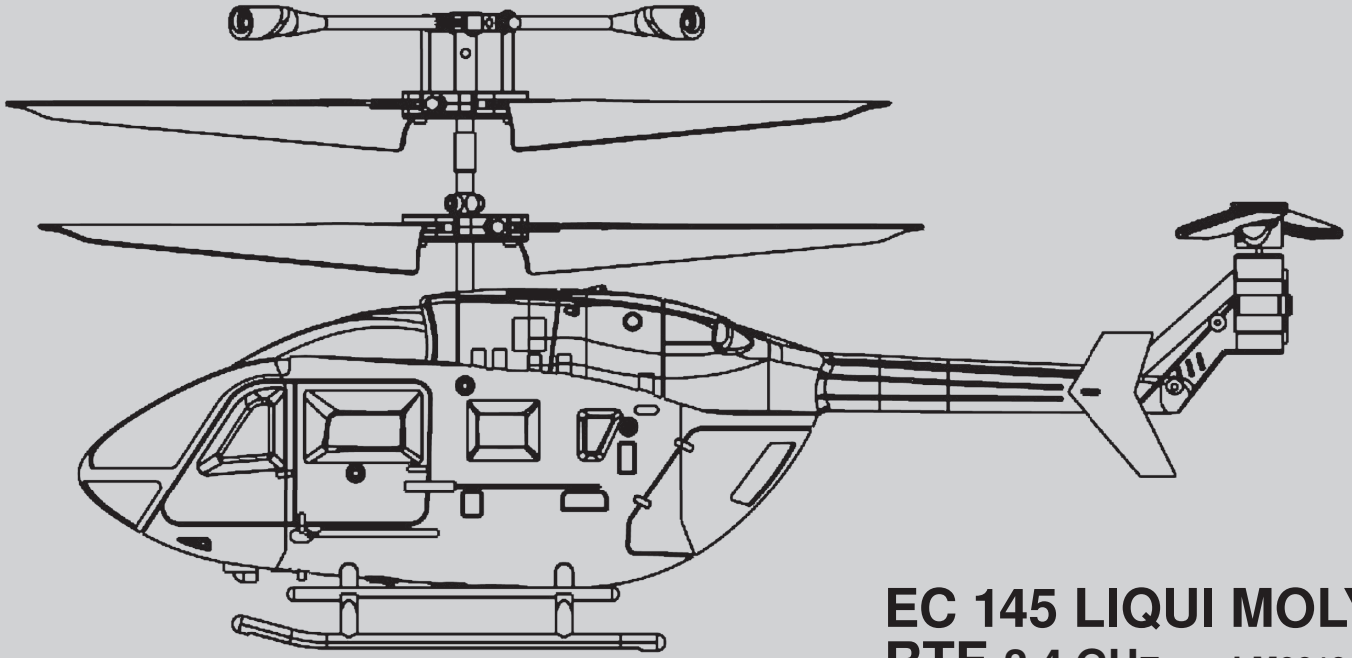
LIQUI MOLY

Operating Instructions



EC 145 LIQUI MOLY

RTF 2.4 GHz **LM001001**

assisted by robbe Modellsport GmbH & Co. KG

Explanation of specialist terms:

Motor speed ("Throttle"):
This controls the model's climb and descent.

Yaw:
The model's movement around the vertical axis; the helicopter rotates to right or left.

Pitch axis:
The model's movement around the lateral axis, Forward or reverse flight.

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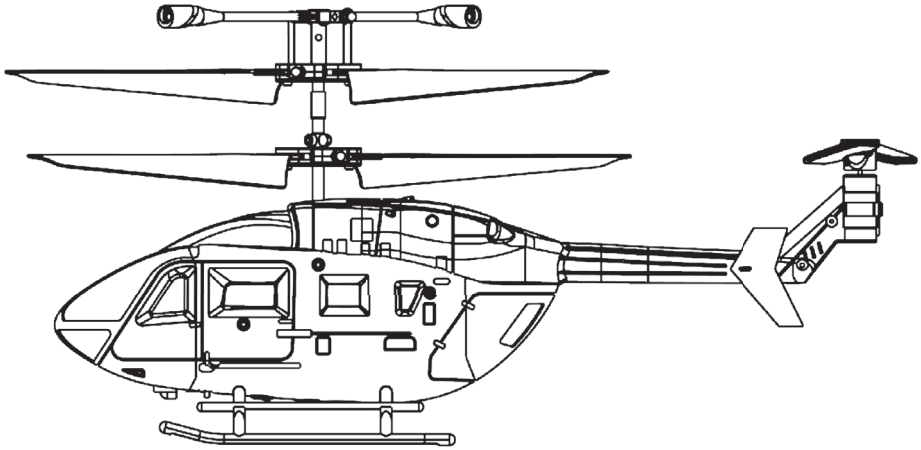
Introduction

Co-axial RC model helicopter which is particularly easy to fly.
The model of the EC145 enables you to make a start in the exciting world of radio-controlled model helicopters, even if you have never previously flown such a model. Its sleek looks, easily mastered flying characteristics and robust technology make our EC145 LIQUI MOLY the ideal first step in indoor model helicopter flying.



Pre-flight checklist

Classification:	3-channel co-axial rotor Helicopter of scale appearance
Qualification:	Beginner
Flying conditions:	Indoor
Flight time:	5 - 6 min.
Charge time:	approx. 45 - 50 min. (flight battery)
Radio control system:	3-channel - 2.4 GHz

(Values for flight and charge times are approximate, and may vary due to various influences)

Be sure to read these Safety Notes before you assemble your model. Always keep to the procedures and settings recommended in the instructions.

If you are operating a radio-controlled model aircraft, helicopter, car or boat for the first time, we recommend that you enlist an experienced modeller to help you.

Safety Notes

Radio-controlled models are not toys in the usual sense of the term. Young persons under fourteen years should only be allowed to operate them under the supervision of an adult.
Building and operating these models requires technical expertise, manual skills, a careful attitude and safety-conscious behaviour.
Errors, negligence and omissions in building or flying these models can result in serious personal injury and damage to property.
Since the manufacturer and vendor are not in a position to check that your models are built and operated correctly, all we can do is bring these hazards expressly to your attention. We deny all further liability.

⚠ **Helicopter rotors, and all moving parts generally, constitute a constant injury hazard. It is essential to avoid touching such parts.**

⚠ **Please bear in mind that motors and speed controllers may become hot when operating. It is important to avoid touching these parts.**

⚠ **Do not stand close to the hazard area around rotating parts when an electric motor is connected to the flight battery.**
You must also take care to keep all other objects away from moving or rotating parts.

Ensure the equipment is protected from dust, dirt and moisture contamination. Do not subject the system to excessive heat, cold or vibration.

Use the recommended charger only, and charge the batteries only for the prescribed period.
Check your equipment for damage at regular intervals.
Do not re-use any devices which have been damaged in a crash or by water, even when they have dried out again.
Crash or water damage can result in concealed defects which may lead to failure in subsequent use.
Use only those components and accessories which we specifically recommend.
Do not carry out modifications to the radio control system components apart from those described in the instructions.

Operating the model

Caution - injury hazard:
Please keep your model helicopter - including small co-axial and single-rotor models - a safe distance away from yourself and others. Never fly over spectators, other pilots or yourself. Always fly manoeuvres facing away from other pilots and spectators. Please note that model helicopters generally, and aerobatic types in particular, are subject to enormous flight loads, and that interference cannot be ruled out even when you are using the best possible radio control system components. Operating these models requires a highly responsible attitude and all possible safety precautions for pilot and spectators.

- Never fly over spectators or other pilots, and maintain a safe distance from them at all times.
- Never endanger people or animals.
- Never fly close to high-tension overhead cables or residential areas.
- Do not operate your model in the vicinity of canal locks or open waterways.
- Do not operate your model from public roads, motorways, paths and squares etc.; use authorised model flying sites only.
- **Never operate the model in stormy weather.**

Insurance
Ground-based models are usually covered by standard personal third-party insurance policies. In order to fly model aircraft you will need to extend the cover of your existing policy, or take out specific insurance.
Check your insurance policy and take out new cover if necessary.

Liability exclusion:
robbe Modellsport and Liqui Moly are unable to ensure that you observe the assembly and operating instructions, or the conditions and methods used for installing, operating and maintaining the model components.
For this reason we accept no liability for loss, damage or costs which are due to the erroneous use and operation of our products, or are connected with such operation in any way.

Regardless of the legal argument employed, our obligation to pay compensation is limited to the invoice value of those robbe products directly involved in the event in which the damage occurred, unless otherwise prescribed by law. This does not apply if the company is deemed to have unlimited liability according to statutory regulation due to deliberate or gross negligence.

Set contents:

- Co-axial model helicopter, completely assembled and set up, ready to fly
- Painted and assembled injection-moulded plastic fuselage with black glazing
- Internal LiPo battery in the fuselage
- Flight battery charge function via USB lead
- 2.4 GHz three-channel transmitter
- 4 x replacement rotor blades
- 1 x replacement tail rotor blade
- 2 x control pushrods
- Operating instructions

Specification:

Main rotor diameter:	approx. 180 mm
Tail rotor diameter:	approx. 40 mm
Length:	approx. 200 mm
Height:	approx. 105 mm
Weight:	approx. 40 g

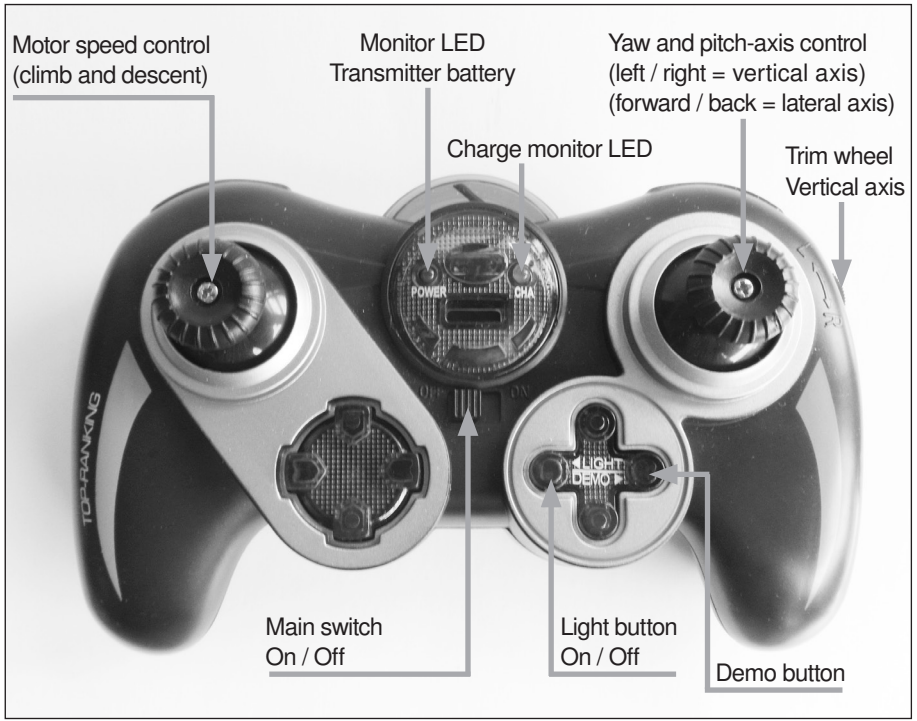
RC functions:
Pitch-axis, yaw, climb / descent

Essential accessories:
6 x alkali-manganese dry cell
AA-size, 1.5 V

CAUTION!
Radio-controlled model aircraft are not toys! A high level of technical expertise and modelling experience are required to complete, fly and maintain this model aeroplane. Assembling and handling the model and its technical equipment carelessly and inaccurately can result in serious personal injury and property damage.

Description of transmitter functions

This transmitter sends the control signals to the helicopter using the 2.4 GHz frequency band. Up to 75 different 2.4 GHz models can be in the air simultaneously without any interference occurring between them.



Inserting the dry cells

Use a cross-point screwdriver to undo the screw which retains the transmitter battery compartment. Place six AA-size dry cells in the compartment. Insert the cells the right way round: the correct polarity is engraved in each battery well. Finally close the battery compartment again and fit the retaining screw; don't over-tighten the screw.

The red monitor LED indicates the state of charge of the dry cells in the transmitter. It should glow constantly while you are flying; if it starts flashing, you must land immediately and replace the dry cells.

Charging the flight battery
It is absolutely essential to give the flight battery a full charge before flying the co-axial model helicopter for the first time. There are two possible methods of recharging the pack:

a) Charging using the USB lead (Fig. A)**:**
The ON/OFF* slide-switch (S) must be set to "OFF" (Fig. A).
Connect the USB plug to the USB socket of a computer, or a USB plug-type charger. The red monitor LED in the USB plug now lights up. Locate the charge plug on the USB lead, and connect it to the charge socket on the underside of the helicopter. During the charge process the red monitor LED in the USB plug remains off.
Continue charging the helicopter's flight battery until the monitor LED on the USB plug lights up again.

b) Charging using the transmitter lead (Fig. B):
The ON/OFF* slide-switch (S) must be set to "OFF" (Fig. A).
Open the cover for the transmitter's internal charge lead on the right-hand side of the transmitter. Connect the charge plug to the helicopter. Switch the transmitter on to start the charge process. During the charge process the green LED on the transmitter glows constantly; it goes out when the flight pack is fully charged. The charge lead can now be disconnected from the EC145, and the transmitter can be switched off. Stow the charge lead in the charge well again. The battery in the helicopter is now charged up, and the model is ready to fly.

The charge process takes about forty minutes regardless of the charge method employed.

*ON = on; OFF = off

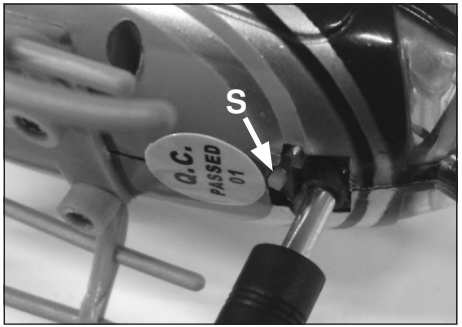


Fig. A

Fig. B

Safety Notes regarding LiPo batteries:

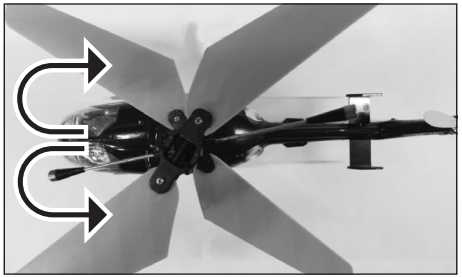
- Do not place the battery in water or any other liquid.
- Never heat or incinerate the pack, or place it in a microwave oven.
- Avoid short-circuits, and never charge the battery with reversed polarity
- Do not subject the battery to pressure or shock loads, and never distort or throw the pack
- Never solder directly to the battery
- Do not modify or open the battery
- Batteries must only be charged with a suitable charger; never connect the battery directly to a mains power supply.
- Never charge or discharge a battery in bright sunlight, or close to a heater or open fire.
- Do not use the battery in areas subject to high levels of static electricity.
- Any of these errors can result in damage to the battery, explosion or fire.
- Keep the battery out of the reach of children
- If electrolyte should escape, do not expose it to fire, as the material is highly inflammable and may ignite.
- Do not allow fluid electrolyte to come into contact with eyes. If this should happen, flush with copious amounts of water and contact a doctor without delay.
- The fluid electrolyte can also be removed from clothing and other objects by rinsing with copious amounts of water.

LIABILITY EXCLUSION
Since robbe Modellsport and Liqui Moly are not in a position to monitor the handling of these batteries, we expressly deny all liability and guarantee claims where the batteries have been incorrectly charged, discharged or handled.

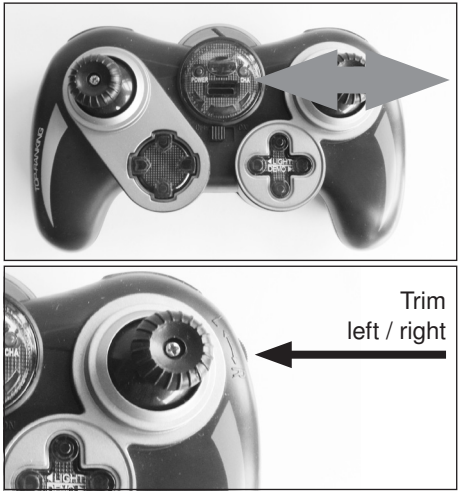
Control functions of the EC145 LIQUI MOLY RTF

Climb and descent

Forward and reverse



Rotate left and right



Operating the PSU

It is important to keep to the following sequence when switching the receiver (helicopter) and transmitter on and off:

Always switch the receiver (helicopter)* on first, and only then the transmitter.

Note that the throttle stick on the transmitter must be at the 'fully back' position! The binding procedure between model and transmitter is complete when the white monitor LED on the helicopter and the red monitor LED on the transmitter cease flashing, and glow constantly.

After flying the model, always switch the receiver (helicopter) off first, and only then the transmitter. If you do not observe this sequence, the transmitter and receiver (helicopter) may not bind.

*The helicopter's On/Off slide-switch is located behind the charge socket (see page 8 of the instructions, Fig. A).

Please switch off after every flight, otherwise the internal battery may become deep-discharged.

Preparations for the first flight

Ideally the first flight should take place in a large indoor space devoid of obstructions.

The helicopter is not designed to be flown in the open air. If you wish to do this, wait for a day with totally flat calm conditions.

Charge the flight battery before flying.

Important Notes

Take-off: raise the rotor speed slowly and steadily until the model hovers at a height of about one metre. It is difficult to control the model when it is very low to the ground due to the turbulence generated by the rotor.

Landing: slowly and steadily reduce the throttle setting until the helicopter descends and touches down. Never reduce the throttle setting abruptly.

⚠ **Caution**: stopping (obstructing) the rotor blades when they are turning can cause serious damage to the mechanical system, and may even result in a fire. Immediately move the throttle stick to Idle if this should happen.

Note regarding the flight battery: as soon as you notice a reduction in motor power, land immediately and disconnect the battery. Never continue flying until the battery is flat, as this causes a deep-discharge condition which results in permanent damage. Allow the battery to cool down before recharging it.

Ensure at all times that the tail rotor is free to rotate, and does not foul the fuselage fairing.

Replacing the rotor blades: if a rotor blade is damaged, replace it immediately. When fitting the new rotor blade, tighten the retaining screw just to the point where the blade still swivels smoothly.

Flying

1. Switch the helicopter and transmitter on (see paragraph "Operating the model" on page 11).
2. Place the helicopter on a horizontal surface in front of you, with the tail pointing towards you.
3. Slowly and steadily move the throttle stick forward until the helicopter lifts off and hovers in front of you at a height of about one metre. If it swings to left or right, rotate the trim wheel (Fig. A) to correct the movement until the helicopter hovers smoothly in front of you.
   If you move the pitch-axis stick forward, the helicopter flies forward. Pull it back towards you, and the helicopter flies backwards.
   Moving the yaw control to the left causes the helicopter to turn to the left. Move the yaw control to the right, and the helicopter turns to the right.
4. You can switch the LED in the helicopter on and off in flight by pressing the Light button (Fig. B).
5. If you press the Demo button (Fig. C) while the model is hovering, the helicopter automatically flies a few metres forward, then flies back again. After this it stops before turning to left and right.
   The monitor LED on the helicopter flashes during this "demo flight". When the "demo flight" is over, the monitor LED lights up constantly again.
   You can terminate the "demo flight" at any time by pressing the Demo button (Fig. C) again.
   You can still control the helicopter's height with the throttle stick.

Fig. A

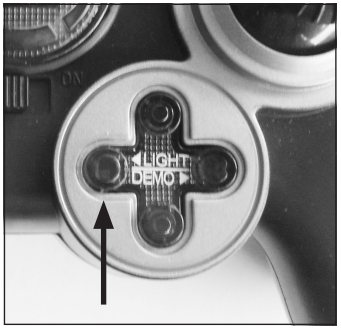


Fig. B

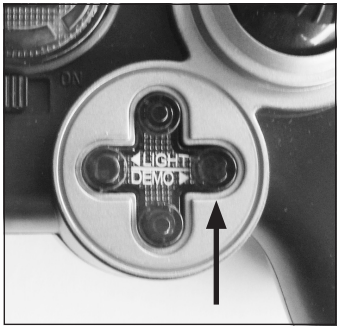


Fig. C

Ensure that there is adequate space when carrying out a "demo flight"!

CE Conformity Declaration in accordance with the law regarding radio apparatus and telecommunications equipment (FTEG) and Directive 1999/5/EG (R&TTE) and Directive 2011/65/EU (RoHS2 – directive)

Manufacturer / responsible individual	robbe Modellsport GmbH & Co. KG, Metzloser Strasse 38 D - 36355 Grebenhain
declares that the product	JY912G LM001001 EC145 Liqui Moly RTF 2.4 GHz
Type (system confirguation with statement of modules where applicable):	
Terminal telecommunications (TC) apparatus	**Radio system**
Application	Model radio control system
Device class	**1**

fulfils the fundamental requirements of § 3 and the remaining relevant requirements of FTEG (Article 3 of the R&TTE) when correctly used.

Health and safety in accordance with § 3 (1) 1. (Article 3 (1) a))

Harmonised norms employed	EN 60950-1 :2006+A1:2010+A12 :2011 EN 62479 :2010 EN 50581 :2012
Fulfilment of the fundamental requirements by other means (standards / specification employed)	

Protective requirements relating to electro-magnetic compliance (§ 3 (1) 2, Article 3 (1) b)

Harmonised norms employed	EN 301 489-1 V 1.9.2 EN 301 489-3 V 1.6.1
Fulfilment of the fundamental requirements by other means (standards / specification employed)	

Measures for the efficient use of the radio frequency spectrum

Aerial interface for radio equipment in accordance with § 3 (2) (Article 3 (2))	
Harmonised norms employed	EN 300 440-2 V1.4.1
Fulfilment of the fundamental requirements by other means (description of standards / interface employed)	

Address	robbe Modellsport GmbH & Co. KG, Metzloser Strasse 38 D - 36355 Grebenhain
Telephone, fax, e-mail:	Phone : +49-6644-870 Fax: +49-6644-7412 e-Mail: office@robbe.com

Grebenhain, 06.06.2013
Location, date

Eberhard Dörr
Managing Director
Name and signature

Conformity Declaration in accordance with Directive RL 2004/108/EG (electro-magnetic compliance) and Directive 2011/65/EU (RoHS2 – directive)

Manufacturer / responsible individual	robbe Modellsport GmbH & Co. KG, Metzloser Strasse 38 D - 36355 Grebenhain
hereby declares that the product	JY912G LM001001 EC145 Liqui Moly RTF 2.4 GHz
satisfies the following norms:	EN 301 489-1 V 1.9.2 EN 50581 :2012
Address	robbe Modellsport GmbH & Co. KG, Metzloser Strasse 38 D - 36355 Grebenhain
Telephone, fax, e-mail:	Phone: +49-6644-870 Fax: +49-6644-7412 e-Mail: office@robbe.com

Grebenhain, 06.06.2013
Location, date

Eberhard Dörr
Managing Director
Name and signature

This symbol means that you should dispose of electrical and electronic equipment separately from the household waste when it reaches the end of its useful life. Take your unwanted equipment to your local council collection point or recycling centre. This requirement applies to member countries of the European Union as well as other non-European countries with a separate waste collection system.

Disposal of batteries

Batteries must not be discarded as domestic refuse. To protect the environment, always discharge exhausted or de These include retail sales outlets for batteries, and communal toxic waste disposal centres. Cover any bare wires with insulating tape in order to avoid short-circuits.

This product can be operated in all EU countries.

LIQUI MOLY GMBH
Jerg-Wieland-Straße 4 D-89081 Ulm
www.liqui-moly.de
Ulm regional court HRB 1383 Managing Director: Ernst Prost

robbe Modellsport GmbH & Co.KG
Metzloserstraße 38 · D-36355 Grebenhain
Technical hotline: +49 (0)66 44 / 87-777 · hotline@robbe.com
Commercial register: Gießen Regional Court HRA 2722
Partner with personal liability:
robbe Modellsport Beteiligungs GmbH Gießen / HRB 5793
Managing Director: Philip Janssen

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